

Your "investor profile" is a picture of a hypothetical investor who has similar characteristics to yours. Your response to this questionnaire will be evaluated to determine your risk tolerance, personal financial situation and time horizon for investing for retirement. Your target asset mix will be based on the answers to these profile questions.

105a ~ 1.) Enter Total Investable Assets:

Please list amount of money you have saved for retirement and other, non-retirement goals. This information will help us assess your household's entire financial situation. Include your transfer or rollover amount under Retirement in the Short-term category because in this process we assume that your transfer or rollover is a cash position.

	Retirement	Non-retirement
Stocks	\$	\$
Bonds	\$	\$
Short-term	\$	\$
Other	\$	\$
Total	\$	\$

**Retirement:** Assets designated for retirement including your rollover or TOA amount.

**Non-retirement:** Assets designated for other goals.

105b ~ 2. What is the chance your household will need to spend more than \_\_\_% of your savings for another purpose in the next 5 years? (Your answer helps us determine whether a significant amount of savings will be needed soon.)

\_\_\_75% \_\_\_50% \_\_\_25% \_\_\_10% or less

105c ~ 3. How much household income are you saving on an annual basis toward your goal? (What is your annual contribution to this goal?)

105d ~ 4. How many people do you support other than yourself? (Dependents may include children, elderly parents, and your spouse.)

105e ~ 5. How much is your household income before taxes? (Include salary, bonus, commissions and other sources of income such as a rental property, alimony and child support.)

FIG3A

*Multi-factor regression model*

$$R_t = \alpha + \beta_1 R_{1t} + \beta_2 R_{2t} + \dots + \beta_N R_{Nt} + \varepsilon_t,$$

where

$\alpha$  = the risk adjusted excess return (alpha) ;

$R_t$  = the excess return of a fund in month  $t$  ;

$R_{kt}$  = the excess return of factor  $k$  in month  $t$  ( $k = 1 \dots N$ ) ;

$\beta_k$  = the beta of factor  $k$  ( $k = 1 \dots N$ ) ;

$\varepsilon_t$  = the tracking error in month  $t$  ;

$p$ -value =  $t$ -distribution (student  $t, n-p-1$ )

$$\text{student } t = \frac{\alpha}{\sigma(\varepsilon_t)/\sqrt{n-p}} = \text{Information ratio} \times \sqrt{n-p}$$

$$\text{Information ratio} = \alpha/\sigma(\varepsilon_t)$$

where

$\alpha$  = average risk adjusted excess return during the period;

$\sigma(\varepsilon_t)$  = tracking-error wrt the custom benchmark;

$n$  = number of observations;

$p$  = number of the independent random variables;

$n-p-1$  = degrees of freedom in  $t$ -test ;

$$\text{Minimize } \lambda W^T H W - G^T W$$

$$\text{Subject To } \sum_{i=1}^N w_i = 1$$

$$\text{Upper}_{\text{stock}} \geq \text{Stock\%} \geq \text{Lower}_{\text{stock}}$$

$$\text{Upper}_{\text{bonds}} \geq \text{Bonds\%} \geq \text{Lower}_{\text{bonds}}$$

$$\text{Upper}_{\text{cash}} \geq \text{Cash\%} \geq \text{Lower}_{\text{cash}}$$

$$\text{Upper}_{\text{foreign}} \geq \text{Foreign\%} \geq \text{Lower}_{\text{foreign}}$$

where

$W$  = weight vector of funds =  $[w_1 \ w_2 \ \dots \ w_N]$

$H$  = covariance matrix of fund tracking-error wrt the investment benchmark

$G$  =  $p$ -value of funds

$\lambda$  = risk aversion ratio (e.g., an empirical value of 10,000)

FIG 4